Objective 8:
Describe the process of neural transmission

Right now as you are reading the words off of this page millions of electrical impulses are racing throughout your brain at speeds of up to 180 miles an hour. These impulses carry information across your body and race to your brain, which is helping you decipher these characters and form them into semantically correct sentences.

Neurons, a nerve cell, are the basic building block of the nervous system. Although there are different kinds of neurons, they all follow the same basic structure. Each neuron has a cell body, which is the base of the neuron, with branching fibers. Dendrites, the fibers, receive the impulses that carry information and the pass it towards the cell body. After the dendrites have passed the newly received signals, they pass it along to cell body, where the impulses are passed down the axon. An axon is a long thin fiber which sends the impulse on its way to the next terminal. The myelin sheath, an insulator, covers the axon and helps speed along the electrical messages. The process then repeats and repeats thousands of times in the blink of an eye.

I see the process of neural transmission and neurons, like a computer network. The dendrites are like routers; they pick up the signals and direct them to the computer. The cell body is like the processor; it’s the middle man that gets the internet signal to send to your monitor. The axon is the wire copper in the Ethernet cord that transfers the
internet signal. The plastic covering of the Ethernet cord is like the myelin sheath; it helps insulate protect the copper wire, or axon, and helps speed the process along. Just like that the Google search engine churns out millions of web pages, or millions of electrical impulses.

These neurons pass along messages when they are stimulated by signals from our sensory receptors or by chemical signals from near by neurons. When the neurons are stimulated they fire an action potential, this is the actual electrical impulse, which travels down the axon. This can only happen if the stimulus exceeds a minimum requirement, or threshold. If the threshold is surpassed, the action potential can be will on its way.

When the impulse is racing down the axon and is approaching the dendrites of another neuron, it reaches an impending cliff. This cliff, or gap between neurons, is called a synapse. When an action potential, or electrical impulse, reaches the end of an axon, it triggers a release of chemical messengers that cross the synaptic gap between neurons. These chemical messengers, neurotransmitters, fill the receptor site on the other neuron and influence whether or not if it will excite, send, or inhibit, stop the message. Then in an interesting process called reuptake, the sending neuron reabsorbs the left over neurotransmitters so that it can fire again.

It is thanks to this process that we are able to breathe, think, and live.


I used this source for the anatomical diagram of a nerve cell and the various parts that all interplay in the process of neural transmission.
I used the book for various definitions and for “outlines” in order for me to create my own examples to show my understanding of the process of neural transmission.